## College of Engineering and Computer Science
### Chemical Engineering

**Fall 2017**

<table>
<thead>
<tr>
<th>Minor/Second Major (if any):</th>
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<th>[CREDIT]</th>
<th>FIRST YEAR</th>
<th>SOPHOMORE</th>
<th>JUNIOR</th>
<th>SENIOR</th>
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### MATHEMATICS (15)

- **MAT295** Calculus 1  
  (4) **F**  
  **SUID**

- **MAT296** Calculus 2 (pr: MAT 295 min C-)  
  (4) **S**  
  **F**

- **MAT397** Calculus 3 (pr: MAT 296 min C-)  
  (4) **F**  
  **S**

- **MAT485** Diff. Eq. & Matrix Alg. (pr: MAT 397)  
  (3) **S**  
  **F**

### SCIENCES (26)

- **CHE106** General Chemistry 1  
  (3) **F**  
  **S**

- **CHE107** General Chemistry Lab 1 (co: CHE 106)  
  (1) **S**  
  **F**

- **CHE116** General Chemistry 2 (pr: CHE 106)  
  (3) **F**  
  **S**

- **CHE117** Gen. Chemistry Lab 2 (pr: CHE 107, co: CHE 116)  
  (1) **S**  
  **F**

- **CHE275** Organic Chemistry 1 (pr: CHE 116)  
  (3) **S**  
  **F**

- **CHE276** Org. Chemistry Lab 1 (pr: CHE 117, co: CHE 275)  
  (2) **F**  
  **S**

- **CHE346** Phys. Chem. 1 (pr: CHE 116, MAT 296 co: PHY 212)  
  (3) **S**  
  **F**

- **CHE347** Phys/An. Chem. Lab (pr: CHE 275/276, co: CHE 346)  
  (2) **S**  
  **F**

- **PHY211** General Physics 1 (co: PHY 221, MAT 295)  
  (3) **S**  
  **F**

- **PHY221** Gen. Physics Lab 1 (co: PHY 211)  
  (1) **S**  
  **F**

- **PHY212** Gen. Phys. 2 (co: PHY 211,221, co: PHY 222,MAT 296)  
  (3) **S**  
  **F**

- **PHY222** General Physics Lab 2 (co: PHY 212)  
  (1) **S**  
  **F**

### WRITING/SOCIAL SCIENCES/HUMANITIES (27)

- **WRT105** Studio 1: Practices of Academic Writing  
  (3) **S**  
  **F**

- **WRT205** Studio 2: Critical Research and Wrt (pr: WRT 105)  
  (3) **F**  
  **S**

- **WRT307** Adv. Wrt Studio: Prof. Wrt (pr: WRT 205)  
  (3) **F**  
  **S**

### SSH Elective

- (3) **F**  
  **S**

### ENGINEERING (9)

- **ECS101** Intro. to Engr. & Comp. Sci.  
  (3) **S**  
  **F**

- **ECS104** Engr. Comput. Tools (co: MAT 295)  
  (3) **S**  
  **F**

  (3) **F**  
  **S**

### CHEMICAL ENGINEERING (36)

- **CEN212** Exp. Methods in BMCE (pr: MAT 296,ECS 104)  
  (3) **S**  
  **F**

- **CEN231** Mass and Energy Balances  
  (3) **S**  
  **F**

- **CEN252** Chem. Engr. Thermodynamics 1 (pr: CEN 231)  
  (3) **S**  
  **F**

- **CEN311** Chemical Engineering Lab 1 (co: CEN 341)  
  (2) **S**  
  **F**

- **CEN333** Fluid Transport (pr: MAT 397,PHY 212)  
  (3) **S**  
  **F**

- **CEN341** Fund. Of Heat & Mass Transfer (pr: CEN 333)  
  (4) **S**  
  **F**

- **CEN353** Chem. Engr. Thermodynamics 2 (pr: CEN 252)  
  (3) **S**  
  **F**

- **CEN412** Chemical Engineering Lab 2 (pr: CEN 341)  
  (2) **S**  
  **F**

- **CEN542** Mass & Heat Transf. Operations (pr: CEN 341)  
  (3) **S**  
  **F**

- **CEN574** Process Design (pr: CEN 353,587)  
  (4) **S**  
  **F**

- **CEN575** Process Control (pr: MAT 485)  
  (3) **S**  
  **F**

- **CEN587** Chemical Reaction Engineering (pr: CEN 341)  
  (3) **S**  
  **F**

### TECHNICAL ELECTIVES (15)

- Choose ONE of: CHE 356, CEN 451, CEN 551  
  (3) **S**  
  **F**

### TOTAL CREDITS

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*See reverse side for all notes*
1. Chemical engineering students must complete a minimum of **15 credits of Technical Electives** from mathematics, natural sciences, and engineering courses not included in the required chemical engineering curriculum. All technical electives are subject to approval by the student’s academic advisor and program director. Courses not included in the description above may be approved by petition if found to have sufficient technical content.

   a. **3 credits of this requirement are restricted and must be chosen from:**
      - CHE 356 Physical Chemistry (pr: CHE 346), or
      - CEN 451 Molecular and Statistical Thermodynamics (pr: CEN 353), or
      - CEN 551 Biochemical Engineering (pr: CHE 275)

   b. **At least one additional technical elective must be in chemical engineering.**

2. Chemical engineering students must complete a minimum of **18 credits Social Sciences, Humanities, and/or Foreign Language** using any one of the following options:

   **Option 1:** Complete a minimum of 18 credits from the Social Sciences List* and/or Humanities List* and/or of a foreign language†.

   **Option 2:** Petition to use completion of the Engineering and Computer Science Management minor to complete the Social Science and Humanities elective requirement.

   *The Humanities List and Social Sciences List of approved courses are published by the College of Arts and Sciences in the Undergraduate Catalog for Advising (coursecatalog.syr.edu). Students should confirm that a course intended to fulfill this requirement is in one of these lists.

   *Please note that the following courses are NOT social sciences or humanities: ANT 131, ANT 431, ANT 433, all CFS, GEO 155, GEO 215, GEO 316, GEO 326, GEO 482, GEO 455, HNR 250, HNR 255, HNR 350, HNR 355, HNR 450, HNR 455; PSY 223, PSY 252, PSY 323, PSY 324, PSY 334. This list is not exhaustive.

   *Students may count ECS 392- Ethical Aspects of ECS towards their Social Science and Humanities elective requirements.

   †Foreign language grammar and/or oral practice courses may not be in student’s native language. Foreign language courses focused on literature, culture, or linguistics in a student’s native language are acceptable.